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ABSTRACT

A study examined the effectiveness of a reading and math basic skills pull-out program. Subjects, 60 students in first through sixth grades enrolled at an upper middle class, suburban school with small class sizes, were identified as having deficiencies in basic skills by their scores on the California Achievement Test (CAT). The basic skills instructional objectives were based on the category objectives for reading and math of the CAT. Subjects participated in basic skills instruction in small groups 3 to 4 times per week for half-hour periods, and their progress was assessed regularly. Results indicated that subjects as a whole made significant gains in reading and math. Results also indicated that statistically significant mean gains in reading occurred only in the first and third grades and that statistically significant mean gains in math occurred only in the first through the third grade. (Twenty-five tables of data are included; 28 references, a list of 19 software programs, and two appendixes of data with test results are attached.) (RS)

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HOW EFFECTIVE IS THE BASIC SKILLS PULL-OUT PROGRAM?

By
Kathryn Mazzola

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ABSTRACT

This study involved a group of approximately sixty students in grades 1-6 receiving basic skills instruction on a pull-out in reading and math. It was hypothesized that the pull-out program would be no more effective in producing achievement than would be expected in a typical year.

An analysis of the results indicated that the gains in reading and math achievement were significant, particularly at the primary level.

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Introduction

According to Winograd and Smith (1985), it is necessary for reading educators to change their attitudes to make reading instruction more effective. Winograd and Smith are concerned with accountability in reading. Goals are set and then performance monitored. How can we measure these potential goals? The range of goals is overwhelming.

Educators and legislators have dealt with the problems by reducing the goals of reading to the kinds of objectives that can be easily measured by large scale standardized tests. But - this approach reduces the goals of reading instruction from developing students who love to read to producing students with an "identifiable level of reading competence."

This view is evidenced by scope and sequence charts and objective lists on standardized achievement tests used to assess the progress of children. Such a view makes the task of accountability manageable. Reading is a complex process, difficult to define in terms of achievement of a certain score on a specific test objective.

Subskills are only a part of the reading process. The overemphasis on skills instruction and the limited kind of reading that students encounter in school creates other problems of accountability. When success in reading is determined by test scores, teachers become more concerned with teaching the skills, than with teaching children about the joy of reading.

Winograd and Smith state that we must encourage our children to become aesthetic readers. We must develop motivated readers. It is a difficult situation for teachers who are held accountable. In order to change attitudes and improve the quality of reading instruction, we must realize that standardized test scores are not the only legitimate measure of a successful reading program.

The test score decline has finally ended. Test scores are rising again. Stedman and Kaestle (1985) suggest that political reformers are taking the credit for change when this is not necessarily true. They contend that other factors including changed family configuration, increasing drop out rate, and other non-school factors may be responsible for rising test scores.

They suggest that changes in schools are a factor, indicating that instruction has focused more on the skills measured by standardized tests. Criterion-referenced tests, which directly link curricular objectives to test items, have assumed a larger role in schools. It is their opinion that these improved test scores cannot solve our educational ills.

Schools must teach higher order skills - emphasis on basic skills has hampered problem solving ability. Many students need to learn basic skills but this philosophy may not serve low-achievers any better today than twenty years ago.

The focus on testing has serious side effects including the uniform curriculum, narrowing agenda, less attention to other goals of self-esteem, and focus on only tested skills.

The problem of standardized testing is nationwide but the solutions take place on a local level, depending upon students' needs, interests and cultures.

Stedman and Kaestle state that tests have played an exaggerated role in recent discussions of educational reform. Rising test scores hopefully will signal solutions of our educational problems, with a renewed emphasis on reading and writing and revived efforts to provide good academic training. Schools must impact more than basic skills - better places for teachers and children to work and learn. The solution is not top-down, test-based.

Each community must develop a philosophy of educationally effective balance between community experience and cultural diversity with testing playing a limited role, according to Stedman and Kaestle (1986).

Larrick (1987) observes that literacy rates are increasing. Something must be basically wrong with present day methods of teaching reading. The mechanics of reading are not the purpose, the goals are the art of reading. Fragmented learning is not reading.

Charlotte Huck (1985) is quoted as saying, "The key word is to make them listen. Research proves that the more literature children are exposed to and the earlier they are exposed, the better will be the reading scores! Then you have them!"

Larrick (1987) states that teachers should read good literature to children. Oral language must be provided for children to read. Dramatization, discussion and illustrations make books memorable to children. Our goal should be to offer children the opportunity to read in an unpressured, pleasurable way.

Larrick sees a basic problem in that standardized tests for the first graders test phonics, not comprehension. Children are then taught test taking skills - but this is not called reading. She feels our emphasis must change to literature-based programs in order to improve student reading ability and reading habits.

There are so many support systems in our schools today. In one school alone, the classroom teacher has academic assistance from basic skills instructors, Chapter I teachers, resource room teachers and other specialists. How effective is basic skills instruction in any district? Are the children classified as in need of basic skills instruction making at least one year's growth, as the "average" child is? In this process, in which grades is progress the greatest or the least? Many districts provide remedial assistance to children in need, on a "pull-out" basis. Is this approach effective, and if so, how effective in terms of academic growth?

The answers will perhaps influence educational practices in the schools and the manner in which such services are offered. If children with extra help, due in fact, fare better, then perhaps such programs should be kept/expanded. If they do not, perhaps remedial programs should be reevaluated.

Hypothesis

Basic skills instruction has become an integral part of our school systems' activities. Billions of dollars have been allotted for the specific purpose of improving literacy in our schools. In this study of two elementary schools, an attempt will be made to determine the effectiveness of the basic skills pull-out program. It is hypothesized that the pull-out program is no more effective in producing achievement than would be expected in a typical year using traditional norms.

Definitions

CAT - California Achievement Test - criterion - referenced achievement test, widely used.

OPR - Objective Performance Report - a report of level of student mastery from CAT, gives the average OPI for the group, local %, national %, and differential.

OPI - Objective Performance Index - summary of group performance for each objective on CAT, defines various levels of mastery.

Category Objectives - specific objectives to be mastered in each area of reading and math.

Basic Skills - instruction for students who fall below state and local standards in reading and math, determined by total reading and math national % on CAT.

Assumptions

We will assume that the classroom teacher and the basic skills teacher have selected appropriate, agreed-upon time schedule for children to be taken out of the regular classroom. We will assume that the parent has been informed of the program and agrees to the plan presented. We will assume that the classroom teacher has a positive attitude and cooperates concerning the child's workload and responsibility during times he is out of the classroom. The basic skills teacher with the child will hopefully have a good relationship and understanding of the goals of the program, with a positive attitude.

Limitations

Personalities of individuals involved in the study can have an effect on the results. If a classroom teacher, parent or child feels uncertainty or resentment about the assistance of basic skills instructor and her role, the program may not be as effective.

Sometimes during the course of a year, a basic skills student is evaluated by the child study team and is classified or removed from the program. We would then not be able to use his scores. The child who speaks another language at home creates another limitation, especially if the child does not qualify for ESL help. New students who enter during the course of the year, could not be included in the study because pre and post test scores woud not be based on the same amount of instruction. Test taking abilities and anxieties are other limitations of the study.

The population samples are small - suburban, upper middle class, and regular classes sizes are small.

Methods and Procedures

In this district, the California Achievement Test is used as a needs assessment tool to identify areas of greatest curriculum strengths and weaknesses on a school and district-wide basis. These areas are determined by analyzing the results and making comparisons. The district can then determine instructional priorities for improvement. Such information is used for program improvement and instructional planning in the pull-out program. Summary data is reported by grade using national percentiles for remedial instruction bands, as prescribed by the state and local district.

The goal of the basic skills program is to identify specific subject areas in which students demonstrate strengths and weaknesses, identify priority areas that need improvement, identify skill areas within subject areas and provide instructional activities on a pull- out basis to meet these needs. The summary data is reported by grade. In establishing a pull-out program, the category objectives of the California Achievement Test in reading and math are used to coordinate the scope and sequence of the test and the basic skills instructional objectives.

The Category Objectives of the California Achievement Test in reading and math are as follows:

Reading

Vocabulary Test	Level
Categories/Words The student will identify a word that is representative of a category presented orally.	11
Definitions/Words The student will identify a word that defines a word or phrase presented orally.	11
Synonyms The student will identify a word that means the same as a given word.	11 12 13 14 15 16
Antonyms The student will identify a word that means the opposite of a given word.	12 13 14 15 16
Homonyms The student will identify a multi-meaning word given two definitions	13 14 15 16
Affixes The student will identify the meaning of an affix.	14 15 16
Words in Context The student will use context to infer a missing word in a sentence or paragraph.	11 12 13 14 15 16

Comprehension Test

Literal Comprehension

Sentence Meaning The student will identify the picture that illustrates the meaning of a sentence.	11
Passage Details The student will answer who, what, where, when, and sequence questions related to a passage.	11 12 13 14 15 16

Comprehension Test (cont.)

Stated Main Idea — 11
The student will identify the main idea stated in a passage.

Inferential Comprehension

Character Analysis — 11 12 13 14 15 16
The student will infer the motives, traits or feelings of characters in a passage.

Central Thought — 12 13 14 15 16
The student will infer the central thought of a passage, such as the main idea, the author's purpose of viewpoint, or the tone or mood.

Interpreting Events — 11 12 13 14 15 16
The student will interpret a passage by drawing conclusions, identifying cause and effect relationships, or predicting outcomes.

Critical Comprehension

Forms of Writing — 13 14 15 16
The student will interpret and differentiate between various forms of writing.

Writing Techniques — 14 15 16
The student will interpret figurative or persuasive language or interpret techniques of writing.

Mathematics

Mathematics Computation Test

Addition of Whole Numbers — 11 12 13 14 15 16
The student will add whole numbers.

Addition of Decimals — 14 15 16
The student will add decimals.

Mathematics Computation Test (cont.)

Addition of Fractions The student will add fractions.	14 15 16
Subtraction of Whole Numbers The student will subtract whole numbers.	11 12 13 14 15 16
Subtraction of Decimals The student will subtract decimals.	14 15 16
Subtraction of Fractions The student will subtract fractions.	14 15 16
Multiplication of Whole Numbers The student will multiply whole numbers.	13 14 15 16
Multiplication of Decimals The student will multiply decimals.	15 16
Multiplication of Fractions The student will multiply fractions.	15 16
Division of Whole Numbers The student will divide whole numbers.	13 14 15 16
Division of Decimals The student will divide decimals.	16
Division of Fractions The student will divide fractions	16

Mathematics Concepts and Applications Test

Numeration The student will demonstrate an understanding of numeration	11 12 13 14 15 16
Number Sentences The student will demonstrate an understanding of number sentences.	11 12 13 14 15 16
Number Theory The student will demonstrate an understanding of number theory.	13 14 15 16
Problem Solving The student will demonstrate an understanding of problem solving.	11 12 13 14 15 16
Geometry The student will demonstrate an understanding of geometry.	11 12 13 14 15 16

The total distribution of scores in reading and math are rankings high to low, by national percentile, grade level, number of students tested and range at each grade level.

Total District Distribution

Reading

Grade	Number of Students Tested	National Percentile Range
Kdg.	78	98%-14%
1	88	99%-11%
2	75	99%-32%
3	93	99%-32%
4	84	99%-8%
5	64	99%-9%
6	81	99%-24%

Mathematics

Grade	Number of Students Tested	National Percentile Range
Kdg.	78	97%-9%
1	82	99%-14%
2	65	99%-17%
3	93	99%-50%
4	84	99%-6%
5	64	99%-42%
6	81	99%-37%

This district determines eligibility for basic skills by using state minimum levels of proficiency guidelines and its own standards for each grade level. These district guidelines are determined by the superintendent and building principals. The California Achievement Test print-out gives the information in a rank order list by school, grade, reading and math, high to low, by national percentile, to help expedite the numbers. The distribution of children eligible for Basic Skills is as follows, using national percentiles as "cut-offs".

Reading

Grade	Cut-offs	Total Number of Students Eligible
1	(0-30% District)	8
2	(0-40% District)	3
3	(0-19% State) (20-40% District)	5
4	(0-18% State) (19-40% District)	2
5	(0-21% State) (22-40% District)	4
6	(0-27% State) (28-40% District)	4

This district does not provide basic skills instruction at the kindergarten level due to insufficient funds.

Mathematics

Grade	Cut-offs	Total Number of Students Eligible
1	(0-30% District)	5
2	(0-40% District)	4
3	(0-45% State)	5
4	(0-40% State)	2
5	(0-48% State)	9
6	(0-46% State)	5

State standards for math have been significantly raised, resulting in more children qualifying for additional instruction.

Basic skills instruction was conducted in grades 1-6, reading and math. The children participated in the program in small groups, 3-4 times per week, 30 minute periods, for reading and/or math. The program was conducted on a pull-out basis. The project had approximately sixty children participating - thirty in reading, thirty in math. The basic skills teacher and the classroom teacher selected an appropriate agreed upon time schedule for children to be taken out of the room. The parents had been informed of the program and agreed to the plan presented. Communications between teachers and parents was on-going.

An item analysis computer printout from the California Achievement Test provided the objectives for the project. Progress was charted regularly. Growth was measured in terms of Normal Curve Equivalent, pre and post testing. The student were primarily middle class, white children of average intelligence.

Specific Skills Analysis

This district receives a summary called the Objective Performance Report for each class and separate Objective Performance Report for the basic skills students. The classroom teacher and the basic skills teacher are provided with a report of the level of student mastery of the category objectives measured by CAT Form E. It shows each student's mastery level of each objective and summarizes group performance for each objective. It is a valuable tool in planning for individual and groups. The report uses the following indications for Objective Performance Index ranges used to define various levels of mastery:

Mastery (+)	.78 - .99
Partial Mastery (p)	.50 - .74
Non-Mastery (-)	0 - .49

Once the needs assessment data was collected, the basic skills instructor formulated instructional plans on a grade level basis. Variables for grouping include socioeconomic differences, experience of students and materials to be considered. Teachers investigated factors that have contributed to student performance. Teachers evaluated the kinds of teaching strategies and instructional activities that have successfully/unsuccessfully been used by the classroom teacher to improve instruction in the area of need. Teachers discussed factors that may have contributed to poor performance in certain areas. Teachers then studied the priorities for each group and looked at specific skills measured by each of these areas. The order of priority determined instructional goals.

Teachers set an organized framework to identify required resources and establish an appropriate schedule for implementing and managing the different teaching methods and instructional levels. As the curriculum goals and objectives were set, teachers established instructional methods and identified teaching activities.

Materials in which the child must use divergent, inferential thinking - "reading between the lines" were used. Students had been generally attuned to one "right" answer. Teachers encouraged students to give imaginative and unusual reasons for their answer if they were essentially sound. Activities which used listening and discussion helped children to express themselves in a clear, organized way. Students learned from each other the reasoning strategies involved in answering questions. Verbalizing answers was an excellent way of working with oral expression. Sometimes there was more than one correct answer and there was usually more than one way to express the answer. It was important for students to learn the evidence for the answer was more important than the answer itself. Opportunities to develop inferential thinking were an important part of the pull-out program. Such methods were used to determine the effectiveness of the pull-out program.

The Basic Skills curriculum was set up in terms of objectives to be mastered. Many times fourth and fifth graders in remedial instruction need to start from the beginning. Many of the programs, games, and computer activities overlap the grade levels. For this purpose, such procedures work best.

Grade 1 - Basic Skills Reading Group

The OPR for this group finds the only area of weakness is in the vocabulary section - Categories/Pictures. To improve Categories/ Pictures area, the following activities are used.

1. Sequence Poster- Discuss with children what is happening in each picture, noting details, and the order of activities shown. Children could predict what the next picture will show. Children could discuss the "who, what, where, when and how" of the picture.

2. Color Pictures- Show a picture of a beautiful spring day and ask the children what words come to their minds to describe the picture. Put sentences into groups of color, flowers, insects, weather words.

3. Language Experience- Use an activity such as a walk around the school on a fall day and describe what you see as the basis for a group/individual language experience skill.

4. Computer disk- Learn About Reading, American Education Corp. Children must categorize and classify pictures and words.

5. Computer disk- Alpine Skier Program #3, Data Command - Children must categorize words and phrases, organize thoughts.

6. CAT Learning Materials, Level 11- Teacher gives oral directions to completing picture activities as "under the table", "in the tree."

7. Developing Listening Skills Kit, Good Apple- Reinforce listening skills and give students a chance to share ideas. Children perform certain activities using pictures and coloring with specific objectives.

8. Thinker Sheets, Good Apple- Children draw pictures with specific details.

Grade 1 - Basic Skills Math Group

In the area of Math Concepts and Applications, the sub-topic Numeration and Measurement needs review/re-teaching. In reviewing the OPR, the area of numeration is weak throughout the grade levels, so it is important to focus on it in the early grades. The following activities are used for these objectives.

1. Cuisenaire Rods- Children can manipulate these concrete items to more fully understand the meaning of place value, making sets, expanded notation and sequence. They are able to be inventive and use the rods as an exploring tool for thinking and comparing relationships.

2. Interlock Cubes, Philogram Publishing- Children explore activities for ordinality, counting order and sets.

3. Teacher-made index cards- Children must match the number to its word name. Children make their own set of index cards with numbers and names.

4. Telling Time Quizmo- Children can play a bingo-type game to teach time concept.

5. Instructo Judy Clock- Children can manipulate clock to show various times.

6. Teacher-made ditto of clocks in which children indicate the time of breakfast, school, bus, lunch, dinner, bedtime.

7. Children make their own clocks to indicate their favorite time of the day.

8. "What Time Is It"- Children play a guessing game with the time three hours before, two hours after.

9. Children use real coins to identify penny, nickel, dime.

10. Children determine if they have enough money to purchase items on display. Children decide how much more they need, if necessary.

11. Media Materials, Count Your Change- Children must determine costs.

12. Children have a certain amount of money to spend in a store and show purchases to cashier with correct amount of money.

13. Calendar- Using a large calendar, children find their birthdays, Christmas, and other special days. Children determine how many days in the current month, the first day of the month, how many Sundays in the month, etc.

14. Children make their own calendar with pertinent information to them for the month.

15. Children are provided with inch rulers to introduce measurement. Children identify lengths of pencils, erasers, etc. around the room. Children determine shorter and longer lengths to teach comparisons.

16. CAT Learning Materials, Level 11 Math - Teacher uses CAT Learning Materials as a follow-up culminating activity.

Grade 2 - Basic Skills Reading Program

The OPR shows a weakness in the area of synonyms, in the Reading Vocabulary section. Reading Comprehension sub-topics of passage details, main, character analysis and interpreting events all need substantial work. The following are used in the basic skills pull-out program.

Synonyms

1. Computer Disk - Learn About Words in Reading I, American Education Computer - Children select synonyms for a given word and fill in the proper word given context clues.

2. Media Materials, Add A Dash of Synonyms - Children listen to cassette, follow directions, identify synonyms on prepared worksheet.

3. Children identify synonyms from teacher-made index cards.

4. CAT Learning Materials, Level 12 - Review of synonyms.

5. Children keep a notebook of their own synonym dictionary.

6. Children make a bulletin board of snowman, flower, etc. demonstrating synonyms.

Synonyms (cont.)

7. Computer Disk - Big Deal Door, Data Command Program 1 - Children use context clues to find synonyms for familiar/unfamiliar words.

To introduce different strategies in Reading Comprehension, these activities are developed.

1. Computer disk - Alpine Skier Program 3, Data Command - Children must categorize words and phrases. Record scores.

2. Computer Disk - Kittens, Kids and a Frog, Hartley - Children read short stories with sequenced practice in factual comprehension. Stories are followed by questions identifying details, sequence of events. Hints are given if a question is missed. Focuses in on sentence to reveal clues. Record scores for future reference.

3. Story Framing - Children use the cloze technique to focus on various components of the story.

4. Media Materials - Be A Detective - Children listen to cassette with accompanying worksheet to reveal character analysis. Draw a happy/sad face to label a sentence.

5. Computer Disk - Reading Comprehension I, American Education Computer - Children are introduced to exercises in reading with understanding, concepts of main idea, cause and effect, predicting outcomes, similarities and differences.

6. Reading and Thinking Book I, Arthur Evans - Students and teacher interact with short, easy to read paragraphs. Discuss possible answers, evaluate thinking, sharing of ideas. Children evaluate a given situation.

7. Media Materials - Can You Solve It? - Children must apply inferential skills given clues. Children learn to follow directions and listen carefully to cassette instructions.

8. Computer disk - Fairy Tales for the Primary Grades I & II, Orange Cherry Software - Children can enjoy fairy tales on the computer.

9. Brainstorming - Think and Write, Starting Out, DLM - Children along with the teacher, brainstorm ideas from pictures and categories.

Grade 2 - Basic Skills Math Group

Math Computation results show a definite need for re-teaching and review of addition of whole numbers and subtraction of whole numbers, as the entire group has only partial mastery in this area. Practice in the following activities is appropriate.

1. Cuisenaire Rods - Children use rods to review basic facts in addition and subtraction, principle of regrouping for addition and subtraction.

2. Digitor - Children use the Digitor to practice and record scores of addition and subtraction facts.

3. Interlocking Cubes - Children use cubes to show place value of ones and tens.

4. Coins - Children use dimes and pennies to demonstrate regrouping and qualities.

In the area of Math Concepts and Applications, the sub-topic of problem solving shows partial mastery. The weaknesses are numeration and measurement. These are the same weaknesses that appeared in the first grade results. These are areas to be remediated to establish a good foundation of math for the future. The following activities in addition to those suggested for Grade 1 Math Concepts are used.

1. Fractions Game, Milton Bradley - Children can manipulate fractional parts to make a whole.

2. Children make their own fraction sets.

3. Children use activity cards for cuisenaire rods to increase place value understanding.

4. Computer disk - Reading and Solving Problems, Software City - Children set us equations in proper order.

Grades 3 & 4 - Basic Skills Reading Group

The group, in general, scored weak in synonyms and poor in antonyms. In the vocabulary area, the following activities are used, to present and reinforce these topics in a different way than the classroom teacher.

Grades 3 & 4 Reading Group (cont.)

Synonyms

1. Milliken Word Puzzles, Milliken - Children must match words that mean the same to complete the puzzles.

2. Thinker Sheets, Enrichment - Children select synonym using context clues to complete picture.

3. Media Materials - Add A Dash of Synonyms - Children listen to cassette (as described in grade 2).

4. Computer disk - Learn About Words in Reading I - (as described in grade 2).

Antonyms

1. Media Materials - Winky and the Lost and Found Department - Children must match opposites in pictures and words, with cassette and matching worksheet.

2. White Water Raft Game, DLM - Children must find the two opposites in the sentence.

3. Children keep a file of opposites.

4. Children illustrate words with opposite meanings.

5. Computer disk - Learn About Words in Reading I - (as previously described).

Context

1. Listening Comprehension Skills Kit, Curriculum Associates - Teacher reads short paragraph containing a "nonsense word". Children listen for clues to identify the word. Children with limited language are given an opportunity to expand vocabulary.

2. Riddle Books, Schaeffer - Children make books to share with parents. Children give four sentences which are clues to the secret picture.

3. Computer disk - Learn About Words in Reading 2, American Education Computer - Children identify words given context clues.

4. Computer disk - Big Deal Door, Program 1, Data Command - Children identify words using context clues.

5. Thinker Sheets, Enrichment - Children draw pictures and complete a story given context clues.

6. Computer disk - Riddle Me This Program, 1, Data Command - Homonyms/Homographs reinforcement.

Results show only partial/non-mastery in all areas of reading comprehension. The program develops reading comprehension in the following ways:

1. Restaurant menus - Children must interpret information on a menu, what is included in the price, etc.

2. Herringbone technique - Children must provide who, what, where, when and how within the framework of "herringbone".

3. Tape recording - Children represent different characters in a story of play to encourage fluency, expression and interest.

4. Laughs and Secrets - Barnell Loft - Children read stories orally, making predictions and reading for a purpose.

5. Computer disk - Big Deal Door #4, Data Command - Children must organize information logically.

6. Newspaper picture and captions - Children match picture to caption to find main idea of picture/story.

7. Brainstorming - Teacher develops a story line with children in terms of detail.

8. Computer disk - Chariots, Cougars, and Kings, Hartley - Children read stories independently followed by questions requiring them to identify detail, sequence of events. Hints are given if question is missed. Children monitor progress with teacher.

9. Prime Time Reading Skills, Good Apple - Children interpret schedules for movies, trains, T.V. programs.

10. School Flyers - Children interpret special pizza day notices, etc. for information - who, what, where, when and how.

11. Computer disk - Alpine Skier, Data Command - Children identify cause/effect, fact/opinion, sequence of events.

12. Children use computer printer to publish special notes for holidays. Children can compose their own thank you notes, etc. with these letters.

Grades 3 & 4 Basic Skills Math Group

The area of addition and subtraction of whole numbers needs review and reinforcement. The following techniques are used:

Grades 3 & 4 Math Group (cont.)

1. Calculator Activities - Children are able to review and check computation.

2. Digitor, Centurion Industries - Children reinforce addition and subtraction facts and record scores for time and accuracy.

3. Math Facts Game, Milton Bradley - Children reinforce principles of commutative and associative.

4. Math Puzzles, Milliken - Children review facts in different ways.

5. What's What Game, Educational Fun Games - Children review addition and subtraction facts.

Math Concepts and Applications

The basic skills group is weak in the area of problem solving and measurement. The following activities are provided to improve these skills:

Problem Solving

1. Restaurant menus - Children use menus to calculate costs of meals for one or more, change from five, ten or twenty dollars, cost of more than one item.

2. Store coupons - Children use coupons to calculate savings on one item and several items. Children calculate food bill and amount saved by using coupons. Student calculates costs of 2/$1.00, change received.

3. Students make their own bar graphs after gathering information from group and tallying information about favorite ice cream, T.V. programs, etc. and compare information.

4. Graphing Fun, Judy Instructo - Children graph coordinates to form figures.

5. Menu Math, Scharf & Johnson - Students play menu math game of solving problems.

6. Computer disk - Read and Solve Story Problems, Cherry Software - Student solves situations by setting up equations properly.

7. Problem Solving Applications in Math, Spotlight, Alan West - Student analyzes information presented in realistic situations.

8. Catalog shopping - Children use catalogs to buy $100 in Christmas presents for each member of the family and calculate costs as close to $100 as possible.

Measurement

Money:

1. Amusement Park Game, DLM - Children must buy tickets to rides and make correct change. Children develop basic monetary concepts of recognizing money value and identifying coins.

2. Media Materials - Count Your Change - Children must exchange pennies, nickels, dimes and quarters correctly to make a dollar, recognize various combinations.

3. Class sets up a store to make purchases. Children will be cashiers, clerks, customers.

Time:

1. Teacher and children review hour, half-hour, quarter-hour of clock.

2. Schedules - Children develop time schedule for a typical day: time for breakfast, school, gym, bedtime and make clocks to match. Decide time three hours ahead, three hours after a given time frame.

3. Computer disk - Telling Time, Education Microcomputer - Children must indicate timer on clock given certain information.

4. Computer disk - Let's Go Back In Time, Education Micro-Computer - Review of time.

Calendar:

1. Children use a current calendar to review months in a year and days in a month, identify first day of the month, last day of the month, how many Mondays, days until someone's birthday, identify holidays of the month.

2. Pupils make their own calendars of current month, noting days off, etc.

3. Children interpret school notices for happenings of the month.

4. CAT Learning Materials, Level 13, Math - Children review and reinforce the interpreting of calendars.

Temperature:

1. Children interpret large cardboard thermometer and meaning of "red" part and lines representing numbers.

Measurement (cont.)

2. Children read real thermometers/thermostats in the room and out of the room and compare daily. Children will use graph paper to make own thermometer to keep daily log of information.

3. Children compare winter and summer temperatures and make own "seasonal" thermometers.

4. Children use weather map in the newspaper to compare/contrast temperatures around the country.

Weight and Capacity:

1. Children weigh and measure themselves and compare information in three month period of growth.

2. Children weigh canned goods and compare.

3. Children compare capacity of quart, gallon, etc. by filling up each with water and recording their findings.

Area and Perimeter:

1. Children review interpreting inches on a ruler.

2. Children cut out and compare shapes in area and perimeter.

3. Children measure and record items in the room and compare.

Grades 5 and 6 - Basic Skills Reading Group

Reading Vocabulary

Homonyms:

1. White Water Rafting Game, DLM- Children must give a sentence using the "other" meaning of the word in a game of homonyms/homographs. Children may also add their own cards to the game with new homonyms as they appear in other lessons.

2. Children may illustrate multi-meaning words and give a sentence for each.

3. Computer disk - Learn About Words 2, American Educational Computer- Children must provide the correct homograph and meaning in sentence provided.

4. Children may make a homograph mural on a continuing basis.

Reading Vocabulary (cont.)

5. Children may keep a dictionary of multi-meaning words and add to it as other words appear. Write sentences for each entry. Add a page a day.

6. Children may find homographs in the newspaper, magazines.

Affixes:

1. Alphamaster, Centurion Industries- Children may review prefixes, suffixes and plurals and record scores for future references.

2. Learn About Words 2, American Educational Computer- Children review the ways in which prefixes, suffixes and plurals change the meanings of words in a sentence.

3. Children make a bulletin board of prefixes and suffixes with root words to match.

4. Children match prefixes and root words on prepared deck of cards. Children write sentences with and without prefixes and suffixes to show how affixes change the meaning of the word.

5. Teacher lists root words on board. Teacher lists another column of prefixes and suffixes and have children match and give meaning of new word.

Reading Comprehension

Results of the grades 5 and 6 group indicate that the children can answer the low-level, literally based questions, rather than the important ideas in a story, specifying the main character's problem in the story and attempts to solve the problem. The flow of the story should be the criteria for questions. Guided reading questions should be limited to eliciting only those details that drive the flow of the story - problems, goals, attempts to solve problems, characters' reaction, resolutions, and theme. Inference questions enhance both story specific inferential comprehension and comprehension of new stories. Questions which invoke relevant prior knowledge and predicting what will happen in a story, result in better inferential comprehension.

In the area of character analysis, these types of activities are used:

1. Children identify cartoons of characters in the story and tell what they might be saying or how they are feeling.

2. Children identify characters in the story and match to various adjectives - lonesome, happy, angry.

Reading Comprehension (cont.)

3. Children describe the way a character sees herself, how others see her, with a checklist.

4. Children pretend they are one of the characters in the story and write a letter to one another.

5. Children have a checklist of events that characters in the story recall.

6. Children match characters in a Name Bank to statements made.

7. Class discusses how feelings about a character change as the story goes on.

8. Children identify ten character traits from best to worst and name two story characters who represent #1-#10 on the list.

9. Class discusses validity of character traits of story figures.

10. Children make bulletin board of character match game - cutting out pictures from magazines and matching traits to character. i.e., Rocky

Central Thought:

1. Children will use pre-reading "Think Questions" to focus on the main idea of the chapter.

2. Children will describe problems/relationships using semantic webbing/mapping to emphasize main idea.

3. Children will do story framing - cloze technique.

4. Children will compare major events in the story in class discussion.

5. Children rewrite the story with sequence cards developed from brainstorming, using clue words.

6. Children make a Summary Tree in which the main idea is the trunk and branches are the details.

7. Teacher provides an interesting mystery title and asks children to develop it.

8. Children draw pictures of a recent trip or activity and write a title that expresses the main idea and develop the main idea of the paragraph.

Central Thought (cont.)

9. Children match headlines of newspaper to actual article.

10. Children may chart/outline information to help organize information in the content area.

Forms of Writing:

1. Children identify sentences from the story as fact or opinion.

2. Children make up sentences of fact and opinion.

3. Children make up sentences of things that could/could not happen.

4. Children and teacher share fantasy stories.

5. Group selects a familiar fairy tale or classic and distinguishes between what is realistic and what is fantasy.

6. Children act out situations - real and unreal. Write skits.

7. Children read and interpret school notices, announcements, and advertisements in the newspaper.

8. Children make their own notices of an upcoming event.

9. Group reads and interprets advertisements in the yellow pages and supermarket fliers.

10. Computer disk - Alpine Skier, Data Command- Children distinguish fact and opinion while downhill racing.

11. Computer disk - Reading Comprehension 2, American Educational Company- Children answer questions in a story using inferential skills.

12. Media materials - Let's Look At Fact and Opinion- Children listen to cassette and fill in worksheet to distinguish fact and opinion.

13. Children gather articles from newspapers and determine if they are fact or opinion. Display in two columns with captions.

14. Students conduct an opinion poll and graph the results.

15. Students read a movie review by critics and discuss.

16. Class reads "Letters to the Editor" and editorial page of the newspaper and discuss persuasive opinions.

17. Class reads articles in magazines and determine if they are factual or writer's opinion.

Writing Techniques:

1. Children write letters to a friend describing a problem.

2. Children write letters to the author.

3. Children write letters with possible solutions to problems.

4. Children write to local authors.

5. Children write stories abut person acting in a particular manner, i.e. proud, helpful, crabby, quiet, nosey, friendly.

6. Children make a list of their own traits.

7. Children make advertising posters of a favorite book.

8. Computer disk - Big Deal Door, Data Command- Children learn comprehension skills through colorful language and making analogies.

9. Children draw pictures to illustrate literal meaning of expression.

10. Children keep a log of figurative language and define.

11. Class makes a seasonal bulletin board of figurative language, i.e. February - "heart of gold", "heart to heart".

12. Children Play Senses Game- Name something that a person can hear, taste, see, smell, touch.

13. Children collect menus that appeal to different senses and also create original menus using sensory imagery to increase the appeal of a selection.

14. Children make up expressions to illustrate the use of senses, i.e. picture of an ear/bees buzzing.

Mathematics Group - Grades 5 and 6

The more complex computation in upper elementary math indicates the greatest need in the area of subtraction of whole numbers, subtraction of fractions, division with and without remainders. In math concepts and applications, time and calendar, measurement and geometry are the weak areas.

Math Computation

Subtraction of Whole Numbers:

1. Teacher reviews the basic principles of subtraction of whole numbers, using sticks and bundles of sticks in groups of ten. Regroup and rename.

2. Children practice regrouping in subtraction in board work.

3. Children practice subtraction and use calculator to check work.

4. Children take turns using overhead projector to solve subtraction with regrouping.

5. Children calculate change from one dollar, five dollars, ten dollars, and twenty dollars.

6. Children practice and compare answers with each other.

7. "Count Your Change" game, Milton Bradley- Children practice subtracting from a dollar, etc.

8. Digitor, Centurion Industries- Children practice subtraction facts and record accuracy and time.

Subtraction of Fractions:

1. Children illustrate a problem involving subtraction of fractions on graph paper, cut out and demonstrate.

2. Children make a fraction bank with fractions to subtract.

3. Children make a bulletin board using flowers and petals for fractions, subtract a petal and exchange problems.

4. Students use gas gauge to illustrate subtraction of fractions, i.e tank 1/2 full, 1/4 full. Pupils illustrate our own gas gauge.

5. CAT Learning Materials, Level 15/16, McGraw Hill

Division with and without remainders:

1. Teacher puts 24/25 books, cards, or pencils on the table and asks how many each would get if we were to divide them equally among four students, with remainders, without remainders.

Math Computation (cont.)

2. Students use coins to divide money equally among five people paying a bill at a restaurant.

3. Children calculate how many items each person on a picnic will be served with a given total.

4. Children play Quotient Bank of identifying various division facts with a given quotient and fill in card bank with index cards.

5. "What's What Game", Educational Fun Games- Children select correct operation.

6. Digitor, Centurion Industries- Children practice division facts, record scores and time.

7. Children practice division problems on board to identify difficulties.

Math Concepts and Applications:

Time and Calendar:

1. Children fill out a time conversion chart. Discuss addition with regrouping quantities of time.

2. Group discusses A.M. and P.M. and 24 hour time periods. Teacher provides two clocks to demonstrate 2-12 time periods.

3. Group fills in a time line of important dates in current social studies lesson.

4. Class discusses importance of time in sports and compares. i.e. downhill skiing, track in Olympics, physical fitness tests.

5. Teacher provides calendars for children to find the first Monday of the month, two weeks from Thursday, fill in important dates of the month.

6. Students match hands on clock to a digital clock.

7. Students make a schedule for a 24 hour period, calculate three hours before, two hours after.

8. Students calculate information from a time card.

Math Concepts and Applications (cont.)

Linear Measurement:

1. Students divide in pairs and measure each others shadow in the same location at three different times of the day. Children compare results.

2. Students measure length and width of desks, books. Calculate length of line if all desks were placed end to end.

3. Pupils estimate appropriate unit of measure for statements given, i.e. Mr. Smith is about 6 _____tall.

4. Children play a game of identifying objects in the room by a given area and perimeter.

5. Class measures length and width of gym, playground.

6. Individuals use graph paper to determine area/perimeter.

7. Class researches area/perimeter of places where games are played, i.e. standard basketball court, tennis court.

Metric Unit:

1. Students measure each others' height and weight with metric stick and kilogram scales. Fill in chart and compare information.

2. Using a map with kilometer scale, children compute distances between two points in kilometers.

3. Students make bulletin board using a world map to demonstrate countries which use the metric measurement. Students bring examples of metric measurement.

4. Children measure items in centimeters.

5. Teacher makes up ditto with pictures of items. Students match metric unit to use to measure item.

Weight, Capacity and Temperature:

1. Class brainstorms words describing measurement. Group words together into categories based on length, volume, temperature, time, and weight.

2. Group reviews reading thermometers and student records temperatures at various times of the day.

Math Concepts and Associations (cont.)

3. Students compare, convert and verify amounts of water in a cup, pint, and gallon container.

4. Students weigh objects on a scale and compare.

5. Students prepare a conversion chart.

Geometry:

Symmetry:

1. Computer disk - Algebra and Geometry, McGraw Hill- Children are introduced to algebra and geometry.

2. Teacher provides students with rectangles, triangles, circles to cut out and find the line of symmetry.

3. Using other geometric figures, decide with students if there is a line of symmetry.

4. Students find symmetrical figures in magazines, cut figures in half along line of symmetry and paste half on index card.

5. Students find examples of symmetrical architecture and display on bulletin board. Make our own symmetrical buildings to display.

Points, Lines, Segments and Rays:

1. Students define point, lines, segments and rays and provide objects, looking for representation of these.

2. Class chooses examples of points, line segments and rays within the classroom.

3. Children trace pictures according to directions of color.

4. Children connect line segments on a prepared ditto to reveal a picture.

5. Graphing Fun, Judy Instructo- Children reinforce basic graphing skills.

6. Computer disk - Exploring Tables and Graphs, Command Data- Children explore graphing information.

7. Students find examples of lines and rays in magazines and newspapers.

8. Make a collage of points, lines, segments and rays.

Angles and Angle Relationships:

1. Students review use of protractor and demonstrate meaning of an angle.

2. Students measure angles with protractor.

3. Students cut out right angles, acute angles, obtuse angles.

4. Students collect examples of various angles.

5. Students construct various angles on peg boards with rubber bands.

6. Students compute angle measurement on a teacher made ditto.

Plane Figures:

1. Students make jigsaw puzzles from poster board. They cut out six equilateral triangles and various shapes, write names on back and reassemble puzzle.

2. Students find the largest number of triangles into which a square can be divided with 2, 3 and 4 lines. Do the same with a rectangle.

3. Divide a circle into 6 equal arcs and number them consecutively from 1-6. Have students make outline of a design by joining points with straight lines as per directions. Complete and color. Do the same with triangles.

4. Student traces geometric figure from teacher example and caption.

5. Teacher provides wooden figures to represent many surfaces, shapes and angles to handle.

6. Students draw side view, front view, and top view of a table, a tent, and a can.

7. Pupils cut out examples of solid figures in advertising and illustrations, label and make a scrapbook.

8. Children find examples of solid figures in the classroom.

Similar and Congruent:

1. Children draw congruent shapes as in fairy tales, i.e. three bears, seven dwarfs.

2. Students make a bulletin board of congruent/similar shapes after finding leaves outside the school.

3. Students make shapes on graph paper and exchange so that others may draw a congruent shape.

4. Students make congruent figures out of clay or cookie cutter.

5. Students make a mural in colored construction paper of similar/congruent shapes.

6. Students list objects that have congruent shapes/similar shapes, i.e. identical twins, orange/grapefruit.

Coordinate Geometry:

1. Children use a town map to locate our school, home, police station by coordinates.

2. Children play a game of "Where Am I?" giving coordinates and finding locations.

3. Graphing Fun, Judy Instructo- Children make various animals by plotting coordinates.

4. Children play bingo type game of calling out ordered pairs which children have plotted.

5. Children correctly code numbers to draw a ladder on the grid to discover a pattern.

6. Children make a large grid on the floor with masking tape. Students walk to pair names, moving to different points, identify the coordinates of new positions and return to seat.

7. Children make up and plot their own ordered pair to form a pattern.

Evaluation of the Testing Instrument

The latest review of the California Achievement Test is the Ninth Mental Measurement Yearbook, 1985. The reviews are of Form C & D. Bruce G. Rogers, Assoicate Professor of Educational Psychology and Foundation, University of Northern Iowa, Cedar Falls, Iowa, makes the following observations about CAT C & D.

Rogers Review of CAT C & D

Positives

1. Pre-Test must be used with considerable teacher judgement, but does emphasize individualized testing.

2. Attractive format

3. Category objectives were reviewed for bias and resulting item analysis followed good professional practice.

Evaluation of Testing Instrument (cont.)

4. Item analysis is well described in manual.

5. Norming procedure of fall and spring provides a wide range of data available to users.

6. Description of standardization sample is quite complete to provide for quite adequate normative data.

7. Variety of derived scores available for reporting purposes.

8. Category objectives recommended for teachers to determine priority area of instruction.

9. Authors attempt to provide mastery scores.

10. Reading tests are well planned.

11. Vocabulary results are enhanced by use of three methods - antonyms, synonyms, context.

12. Teacher guide is an effective classroom resource with appropriate in-service education.

13. Examiner's Manual gives detailed instructions for administering the test at each level.

14. Discussion of test bias is very readable.

15. Advertising brochure is in good ethical taste.

16. Authors extend data on bias in this edition.

Negatives

1. Pictures on page with reading passages can be distracting. Children are not being tested on their interpretation of pictures.

2. Category objectives reviewed and analyzed in curriculum guides are not defined. The category objectives can be ambiguous in phrasing, i.e. "understand". Objectives would be more helpful if expanded into a two-way content by process outline.

3. Standardization process does not take into consideration the explanation that poorer districts are more likely to participate than wealthier districts because of the financial incentive.

Rogers Review of CAT C & D (cont)

4. No discussion of proper interpretation of Anticipated Achievement Scores, which are potentially dangerous if improperly used.

5. Interpretation of scores in the chance range is problematical.

6. Category objectives are based on too few items.

7. Reliability scores for sub-tests should be interpreted with considerable caution.

8. Emphasis in comprehension seems to be on fact rather than on main concepts.

9. Some items in reading comprehension may be answerable without reading the passage.

10. Math section lacks concentration on estimating.

11. Technical Bulletin should use small group directors as try-out group.

In conclusion, Rogers states that the California Achievement Test is a well-developed achievement series. Scores on category objectives at all levels need to be interpreted with sufficient caution. Tests appear to have been carefully developed and normed. He recommends the California Achievement Test as a potential test for districts whose specifications are compatible with their objectives.

Victor L. Wilson, Associate Professor, Educational Psychology and Director, Research Assistant Laboratory, College of Education, Texas A & M University, College Station, Texas concludes:

Positives

1. California Achievement Test is excellent as classically developed norm-referenced test.

2. Reliability are adequate at all levels and all forms.

3. Norm tables and summary statistics are well presented.

4. Additional tables available for variety of purposes.

5. Administration of test is straightforward, using administration manuals.

Negatives

1. No validation of mastery scores or decision consistency of cut-off scores.

2. Lack of observed differences in distributions for fall and spring testing.

3. Results for kindergarten and first grades tend to be somewhat poorer than other grades.

Wilson concludes overall that the battery will provide user with a good interpretable test.

The Technical Bulletin of CAT E & F provides the following information concerning validity and rationale.

The paramount aim is to provide valid measurement of academic basic skills. To identify educational objectives that would be measured, comprehensive reviews were made of state and district curriculum guides, series and programs. Category objectives were derived from this analysis.

CAT E & F is intended to measure a student's understanding of broad concepts as developed by all curricula rather than understanding of the content specific to any particular instructional program. Category objectives were defined according to specification for item development. CAT E & F continues to measure curricular content, but tests have been lengthened significantly, with increased number of items selected for the upper range of the distribution, so the test "ceiling" effects will be minimized. Major difference is noted here.

The scope of reading tests has been broadened. Sight words have been added to the test. Words in context have also been added. Structural writing techniques and comparative forms of writing have been added. Inferential and critical comprehension skills are given increased emphasis. In past reviews of CAT C & D, criticism has been made that there were too many fact type of questions and not enough inferential thinking. Test objectives in math are organized so that clear diagnostic information is provided for specific skills within each operation. This represents a refinement of objectives. In math concepts, emphasis is given to reasoning skills needed for practical problem solving. At upper levels of test, problem solving items have been increased substantially.

The definition and refinement of content specifications were a continuous process during the development of CAT E & F. The procedures were designed to ensure that stimulus materials and items met the content criteria established for the tests were well constructed and were written in language appropriate for the various levels of testing.

Tryout data for CAT E & F were collected in October, 1983 and January, 1984. Statistical information was evaluated by the editors who selected the final tests for E & F. The tryout sample was composed of students in the public and private schools across the country and was structured to be heterogeneous. Comparisons of item performance across ethnic groups were made. Almost two times as many errors in sub-tests were built into the CAT E & F. These were built into the tests as distractors. For each item, statistical information about the performance of all the answer choices was produced by grade. In determining an item's overall quality, discrimination was most important, followed by common error rating, fit, ethnic bias, and sex bias. Statistical information was reviewed by the editorial staff and organized on three types of computer input: Item card printouts, automatic test selection printouts, and interaction display and printout.

The sampling procedure for CAT E & F was designed to provide fall and spring norms based on a sample of the entire United States school population. The basic sampling units are regular public school districts, Catholic schools and all other schools grouped by county (private schools) and were grouped into four geographic regions: New England & Mid-East, Great Lakes and Plains, Southeast and Southwest, and West. The second level of stratification was based on community type - urban, suburban, or rural. Districts within each community type within each region were partitioned into large and small categories. Estimated percentages of students in districts under the poverty level were made. The first stage sampling unit was the district and were randomly ordered.

Anticipated achievement scores are available for Levels 12-20 CAT E & F. The scores allow comparison of an individual student's level of achievement with that of students of similar age, grade, and academic aptitude. Anticipated achievement scores for CAT E & F are a function of age, grade, and scores on the Test of Cognitive Skills. Scores are reported on Class Record Sheet and the Individual Test Record. The difference between a student's anticipated and obtained scores is an estimate of the extent to which the student's obtained achievement falls below or above the typical score of students with similar attributes.

CTB/McGraw Hill used four procedures to reduce bias in CAT E & F:

1. Careful editorial attention to validity as an essential step.

2. McGraw Hill Guidelines and internal editor reviews of test material.

3. Tryout material reviewed by professionals in educational community who represent various ethnic groups.

4. Use of empirical approach is desirable.

Data for black and other student populations were examined, as were male and female analysis.

Planned studies related to validity are planned. The test items in CAT E & F were written to measure student's mastery of collected educational objectives. On scoring reports, objectives are listed for individual and groups, performance designated as indicating mastery, partial knowledge, and non-mastery. These performance indicators are intended to help to decide, before instruction, which objectives to teach which students and to help teachers determine, after instruction, whether students have mastered the objective taught. Data from CAT E & F norming sample will be analyzed using Bayesian procedures to calculate each student's mastery category for each objective. Data will facilitate the interpretation of objective mastery scores by indicating the difficulty of attaining mastery at various grade levels.

Studies are planned related to reliability and errors of measurement. Reliability of CAT E & F will be described by several kinds of data. The standard error of measurement, an estimate of the amount of error to be expected, will be based on the item parameters estimated during the norming and scaling process. An obtained score should not be regarded as an absolute value but as a point within a range that probably includes a student's true score.

Further testing of a nationwide sample will be acquired for a reliability study of CAT E & F. Other studies planned relate to test development include timing, directions, scoring procedures, passage dependency of reading comprehension items. Studies related to scaling, norming, score comparability and equating are also planned.

It should be noted that improvement has been made in the E & F forms which had been earlier criticized in the Buros reviews of C & D forms. For example, use of more interpretive and critical thinking skills in reading, and more applications and estimation in the math section, as suggested. Buros' review of CAT E & F is not yet available.

The following are limitations of this study:

1. Kindergarten is not included in the study.

2. Only students with pre and post test scores are included.

3. New students, tested in September, were included in the study.

4. Students referred to the Child Study Team and subsequently entered other programs, were not included.

5. State standards in math have been significantly raised, resulting in more children qualifying for additional instruction.

Results

National percentile scores are used by the school system to determine which children will continue in the program. Scores are recorded in each student's folder to chart progress to see a full picture. Group reports are examined closely to determine strengths and weaknesses in the program. Teacher input, student performance in class, report card grades and other factors are also taken into consideration.

A comparison of pre and post N.C.E. scores to measure growth was made. As can be seen in Table I, pre and post test means were computed for each grade and each subject (Reading or Mathematics) to allow for direct measuring of mean gains, if any. Mean gains, ranging from 3 points at grade 5 in math to 35 points at grade 2 in reading are shown

Table 1

N.C.E. Mean Score Gain
Reading

Grade Level	Total N.C.E. Mean Pre-Test	Total N.C.E. Mean Post-Test	Gain
1	31	61	30
2	26	61	35
3	38	63	25
4	32	43	11
5	33	43	10
6	40	51	11

Math

Grade Level	Total N.C.E. Mean Pre-Test	Total N.C.E. Mean Post-Test	Gain
1	39	71	32
2	38	66	28
3	41	71	30
4	34	63	29
5	38	41	3
6	43	57	14

Tables II through VI show the pre and post results in reading for each grade and the calculated t.

Table II

Data Analysis Grade 1 Reading

	Mean	Standard Deviation	t
Pre-Test	35.42	4.12	3.66
Post Test	61.75	20.35	

4 Degrees of Freedom - Significant < .01

Table III

Data Analysis Grade 2 Reading

	Mean	Standard Deviation	t
Pre-Test	26.0	12.35	3.00
Post-Test	61.0	15.87	

4 Degrees of Freedom - Not Significant

Table IV

Data Analysis Grade 3 Reading

	Mean	Standard Deviation	t
Pre-Test	38	9.67	4.60
Post-Test	63	7.38	

8 Degrees of Freedom - Significant <.01

Table V

Data Analysis Grade 4 Reading

	Mean	Standard Deviation	t
Pre-Test	32.5	12.01	1.24
Post-Test	43.5	3.54	

2 Degrees of Freedom - Not Significant

Table VI

Data Analysis Grade 5 Reading

	Mean	Standard Deviation	t
Pre-Test	40.25	8.54	2.0
Post-Test	43.5	5.69	

6 Degrees of Freedom - Not Significant

Table VII

Data Analysis Grade 6 Reading

	Mean	Standard Deviation	t
Pre-Test	40.75	8.54	1.39
Post Test	51.75	13.28	

6 Degrees of Freedom - Not Significant

Table VIII shows the mean, standard deviation and t for reading when all scores at each grade level were combined for treatment as pre and post test results. An overall gain of 21 is shown. This result was significantly below the .01 level.

Table VIII

Grouped Data Analysis for Grades 1-6 Reading

	Mean	Standard Deviation	t
Pre-Test	35.27	8.46	6.18
Post-Test	56.15	15.30	

Significant < .01

Significant mean gains are shown at the first and third grade levels, while marked gains are shown at other levels. The latter gains were not significant, however, since there were too few individuals being measured at these levels.

Tables IX through XI show significant mean gains at the first, second, and third grade levels.

Table IX

Data Analysis Grade 1 Math

	Mean	Standard Deviation	t
Pre-Test	39.2	2.28	3.48
Post-Test	55.3	19.47	

9 Degrees of Freedom - Significant < .01

Table X

Data Analysis Grade 2 Math

	Mean	Standard Deviation	t
Pre-Test	38	3.74	5.02
Post-Test	66	19.71	

8 Degrees of Freedom - Significant < .01

Table XI

Data Analysis Grade 3 Math

	Mean	Standard Deviation	t
Pre-Test	41.6	6.84	8.15
Post-Test	71.2	4.38	

8 Degrees of Freedom - Significant < .01

Table XII

Data Analysis Grade 4 Math

	Mean	Standard Deviation	t
Pre-Test	34	12.73	2.04
Post-Test	63	15.56	

2 Degrees of Freedom - Not Significant

Table XIII

Data Analysis Grade 5 Math

	Mean	Standard Deviation	t
Pre-Test	38.89	9.55	.54
Post-Test	41.56	11.22	

16 Degrees of Freedom - Not Significant

Table XIV

Data Analysis Grade 6 Math

	Mean	Standard Deviation	t
Pre-Test	43.8	5.45	3.06
Post-Test	57.8	8.67	

8 Degrees of Freedom - Not Significant

Although gains were made at the fourth, fifth and sixth grade levels, as shown in Tables XII through XIV, they were not statistically significant.

Table XV shows the mean, standard deviation and t for math when all scores at each grade level were combined for treatment as pre and post test results.

Table XV

Grouped Data Analysis Grades 1-6 Math

	Mean	Standard Deviation	t
Pre-Test	39.77	7.06	5.80
Post-Test	58.87	16.69	

59 Degrees of Freedom - Significant $< .05$

An overall gain of 19 point is shown. This result was significantly below the .01 level.

Conclusions and Implications

Is the basic skills pull-out program effective? The question has been the basis for this research paper. The results have shown that the answer is yes. The grouped data for grades 1-6 in reading and math indicates evidence to support this hypothesis. However, the data also indicates a definite distinction between grades 1-3 results and grades 4-6 results. Grades 1-3 showed statistically significant improvement. Grade 2 had a small sample and although N.C.E.'s improved, the growth was not statistically significant.

Neither subject, reading or math, was more effective than the other. Gains in both subjects were comparable. Time periods and instructional framework was similar in reading and math. The growth seemed to be similar. The results in some grade levels are not statistically significant due to the small population in the study. The pull-out program is effective even with such limitations.

Sub-skills used to build foundations in reading and math are very measurable in lower grades, (i.e. short vowel sounds, syllables), but after third grade, the trend is to utilization of these skills and these are hard to measure, (i.e. comprehension, solving problems). The trend overall in grades 1-3 is "learn to read" and in grades 4-6 "read to learn". Possibly there is a positive correlation between kinds of things tested and reading/intelligence ability but reasoning and thinking skills, problem solving abilities are difficult concepts to measure.

Many academic and fiscal decisions are based on the results of the California Achievement Test. Scores are used in placing students, diagnosing strengths and weaknesses and as a basis for remedial programs. Measures for remediation cannot be limited to results of one test, but should be combined with other criteria.

The basic skills pull-out program should effectively head off failure in the early grades so that struggling students get immediate help. Testing lets those who have improved move out of remedial classes. This research does, in fact, show that early intervention does work. Special services should shift to prevention and support, to success and away from remediation and failure. Program emphasis can shift from deficiency to prevention. The pull-out program provides effective support for low achieving students. The implications may include possibilities of adding/expanding preschool and kindergarten programs.

Gains, although made in grades 4-6, were not as significant in reading or math as the gains made in grades 1-3. The pull-out program should become a team effort with all faculty members participating and planning activities. The principal should become facilitator of the program. Teachers and principal should develop a program appropriate to the students and the community.

Whether the program is pull-out or pull-in, the programs have the same goals - to meet individual needs and to help children learn. Support systems must be carefully integrated with regular classroom activities. The children must not feel segregated from the rest of the class. The classroom teacher and basic skills teacher must coordinate services. Through careful planning and frequent communication, teachers can plan a diversified yet consistent delivery system for children with special needs. This system should present an integration of methods, materials, goals, and aims between support personnel and regular classroom teachers.

Patience, reality and attention to the individual child and individual differences for understanding are necessary for a successful program. New perspectives, recognizing problems, using different learning techniques/variations to teach skills are needed. A form of instructional networking is needed. It is necessary to share responsibility, ideas, information, and resources. To make the pull-out/pull-in system work, classroom teachers need to focus on inclusion rather than exclusion. Resource personnel need to be pulled into classroom instructional content and schedules, with the primary goal of building a solid foundation of basic skills.

BASIC SKILLS PROGRAMS: RELATED RESEARCH

Basic Skills Programs: Related Research

Since the 1976-77 academic year, the New Jersey Department of Education has given assistance to schools for a Basic Skills Improvement Program. The program provides for additional instruction in reading, writing and math for children in greatest need, according to state and district standards. The Thorough and Efficient law and code clearly defines the goals of education. It states that plans for student achievement must include identified achievement needs in reading, writing and math and activities that will be taken to alleviate these needs (N. J., Ch. 212, Laws of 1975). The identification will come from existing data and will include individual improvement plans. Program guidelines in basic skills for local school districts will be provided by the state. The local school district then implements procedures for improving the basic skills in reading, writing, and math for the 76-77 school year.

Screening includes diagnostic measures used to predict learning difficulties and needs. Instructional services are supplemental to the regular school and based upon identified priority pupil needs. Important procedures include communication between the basic skills teacher, classroom teacher and parents. Evaluation procedures must be implemented which measure gains in basic skills proficiency related to preventive and remedial program objectives and standards. Evaluation of the effectiveness of state compensatory preventive and remedial educational programs in terms of pupil gains in basic skills proficiency must be established (N.J. Administrative Code, Title 6:8-3.8). Each district in New Jersey must comply with these guidelines.

According to Airasian (1987), new forms and uses of standardized testing have arisen due to educational growth, shifts in school control and the "politics" of educational decision making. Policy oriented tests are mandated and controlled by agencies external to the local schools and are widely used to certify student competence. These tests are at the root of most current debates and controversy regarding educational testing. Standardized tests have become an important tool in the efforts of state governments to improve educational standards and to gain control over the process of education in local school districts. A survey of school reform initiatives in the 50 states (Education Week, Feb. 6, 1985) indicates an increasing reliance on testing. Such testing programs are among the most pervasive and public, although they are not the only tool state governments have adopted to improve, control and standardize the process and outcomes of education.

Tests are trusted and desired by a majority of American adults (Gallup 1984). Tests are also linked to the maintenance of educational standards and tradition. Tests are perceived by most people to be "scientific" because they produce a numerical score. These are objective, because decisions made from them are not based on teachers, principal or parents personal bias (Airasian 1984). Standardized testing programs provide some legislative control over local school district policy and goals.

Airasian (1987) states that these tests seek to measure minimum competence, not maximum performance. Since administration of the tests is mandated by the states, the local districts have little discretions to passing standards. One standardized test is often the primary piece of information used in decision making. Often the tests influence and alter educational practice. Standardized tests are tools, means to an end, not ends in themselves. Airasian (1987) concludes that the recent rise and spread of new test uses including test-based school funding, are at the root of the most current test debate and controversy, since these uses of test results involve the distribution of educational benefits and resources. If these factors are considered important for success in our society, and particularly if such resources are scarce, the mechanism used to distribute them will be extremely important to individuals and groups who seek the benefits and resources. Standardized tests are also intertwined with social and political issues such as equality, social standards and control. The rise of policy-oriented test uses has changed the context of educational testing in America.

In a comparative study by Somerville and Leach (1986), an evaluation of three types of intervention programs for assisting students with specific reading difficulties was conducted. The intervention programs were psychomotor, self-esteem enhancement and direct instruction. The direct instruction program resulted in gains in reading performance significantly greater than the other two programs and the control group. None of the programs succeeded in significantly raising performance levels on measures of psycho-motor performance or self-esteem. Post-intervention questionnaires completed by the subjects, parents and teachers, indicated that perceived success differed significantly from measured success. The puzzle of the child who appears unable to learn basic skills, despite having average or above average ability in other areas, has concerned psychologists, educators and parents for many years. Despite large numbers of children affected, little agreement has been reached in the types of intervention programs that may best help them overcome their learning difficulties. Direct instruction deals with task analysis, positive reinforcement, teaching to mastery and measurement of progress. Direct instruction approaches aim to teach the skills which are lacking. Evaluation studies have found that the direct instruction approach is effective in increasing rates of learning for all children, but seems to be regarded with suspicion (Barnes, 1985).

The direct instruction program achieved significantly higher scores on the reading test than all the other groups, but was enjoyed the least by students. Only the direct instruction group made significantly greater reading gains than the control group over the relatively short intervention period covered in this study. The positive effects of the direct instruction program seems to be due to its content and delivery. The study confirms that direct instruction would benefit students if it formed the primary means of addressing the reading problems of those with specific learning difficulties. Involvement of parents was seen as an additional benefit.

Based upon an extensive review of literature and interviews with many educators, Glass and Smith (1977) found that the risks of "pull-out" programs far outweigh their gains, and that such pupils pulled out of their classroom are faced with fewer opportunities to increase their levels of academic achievement. The data revealed the following difficulties with pull-out programs:

1. unqualified special teachers
2. student missing classroom instruction
3. no coordination between classroom teacher and special teacher
4. negative relationship between the time pupils spend in "pull-out" classes and reading and math achievement
5. negative labeling
6. lower teacher expectation
7. little parental involvement

Such evidence, Glass and Smith (1977) suggest, limits the effectiveness of pull-out programs. The research provides information which should be taken seriously when planning basic skills programs. The findings provide us with direction.

In a recent poll (Learning F'88), teachers were asked to rate pull-out reading programs. The majority of teachers responded that remedial instruction is beneficial but given the choice, they would abandon the federal programs for smaller classes. The responses which emerged were similar to the results of the Somerville and Leach (1986) study. Problems with communication breakdown, scheduling problems, class disruptions, missed activities and curriculum disagreements were cited in addition to the stigma of students being singled out for assistance.

Teachers felt that communication between themselves and the specialist could be improved. Classroom teachers said the lines of communication seem less open. The reasons may include lack of opportunity or simply isolation. Although teachers agree that planning is the key to an effective program, classroom teachers and specialists often disagree on methods of implementing a program. Responsibility for reading progress of poor readers was often a shared responsibility. Discrepancies also occur in the area of supporting or extending skills and concepts taught in the regular classroom. Disagreement about specialist's particular approach also causes problems. Another source of debate is motivation and behavior management. Use of too many rewards and games, too much positive - one long reward - were noted by classroom teachers. The

question of scheduling is a major headache - appropriate times to pull children out of class. It is a problem for teachers and children in terms of work missed and frustration. Solutions include a protected reading time and better scheduling techniques. Many teachers feel that pull-out programs are designed to be self-defeating because of eligibility criteria and time allotted to remediation Teachers sometimes fault the caliber of the specialist as part of the problem, but the poll found that the majority of children enjoy the program, find it less frustrating, get plenty of attention and learn to feel good about themselves. But more than half the classroom teachers say they would prefer smaller classes to a pull-out program.

Archambault (1986) reported research on effective educational practices for low-achieving students. The research reviews literature on program and staffing structures and instructional setting as a key issue or a bogus concern. In analyzing the strengths and weaknesses of pull-out and in-class instruction, he states that local agencies stayed with pull-out programs, as opposed to supportive service projects, because they were safe and clear. Changes in instructional setting was as a response to public outcry rather than on the basis of sound educational theory. As a result, these changes generated no significant gains in achievement. Archambault points out that research clearly shows that there is no clear evidence for either pull-out or in-class instruction. Other effects of instructional setting on achievement include the impact of the student's self-concept, staff's committment, cooperation and coordination, teacher's autonomy and control, grouping practices, resegregation, and type of instructor. Archambault finds reason to question both in-class and pull-out models.

Archambault clearly concludes in his research that setting is not directly responsible for student outcomes and that it is the issue of effective practices, not setting, that deserves the attention of educators. Educators must consider, more seriously than in the past, what goes on within these settings and how regular and compensatory instruction can be woven together to improve student performance. Reasons for state mandated pull-out programs have little to do with instructional success but rather with ease of accounting, concludes Archambault.

Reactions by Heynes (Dec. '86), generally agree with Archambault's conclusions. Heynes states that the choice of a pull-out model is more a matter of compliance, rather than for pedagogical reasons. Heynes assumes that changes in local conditions rather than changes in the law and regulations, have stimulated the use of in-class models. She concurs with the statement "the type of instruction delivered within a particular setting is more important that the setting itself."

Holley (1986) states that huge gains in achievement simply cannot occur and that pull-out programs are the wrong way to go. Her experience has shown that children were pulled between different learning philosophies and different reading materials, and coordination was preached but not practiced, in a schoolwide research project in Austin, Texas on pull-out programs. The key components of the study were reduced class size, and more importantly, reduction of outside interferences in one teacher's responsibility for the learning of each student.

Holly was confident that aides, volunteers, too many student teachers, and an excess of non-sequential program material or reading systems, and conflicting supervision were all actually leading to decreases in the rate of student learning. The findings concur that huge gains in achievement will not occur through compensatory education, although small gains are possible. The only substantial gains may be those that occur at the early grades. Early childhood education probably yields the greatest payoff because of richness in diverse experience and content-laden programming. Holley concludes that pull-out instruction is not the right approach.

The two project schools were provided a full extra week of staff development, ongoing in-service activities, and external consultants. The project schools stressed individual teacher responsibility for student progress. There were no aides and the only pull-out activities were for special education. Teachers were interviewed by evaluators and classroom observances were made through the year.

The overall picture of the results showed that in no case did the basic skills students score significantly higher than the school-wide population. There was no evidence that the basic skills instruction program was particularly effective in raising reading scores, or other scores. Teachers preferred less students in the class for many reasons - more quality time with students, quicker completion of routine tasks, reduced discipline problems, better use of instructional time, fewer interruptions without a pull-out program. Teacher morale improved. Teachers felt greater closeness to students, more in control and felt more ownership for the progress of students.

In conclusion, lowering the pupil/teacher ratio to 15-to-1 seems to substantially boost the achievement of children in reading, language and math. It is simple, easy to manage, reduces paperwork, reduces instructional interruptions, returns instructional responsibility to the classroom teacher, and seems to improve the quality of instruction and teacher morale. Most importantly, it seems to improve achievement meaningfully in all basic skills areas.

Its greatest drawback is its cost. However, since basic skills instruction funds can only serve a portion of those in need, the future question might be whether it is better to serve an even more limited number with a program that makes a significant difference.

The major findings of the Austin study, according to the Final Technical Report (Nester, Ligon, Carsrud, 1982), were that pull-out has neither academic or social benefits and may be detrimental. Pull-out compensatory education appears to be particularly dangerous to children served by multiple programs. Children pulled out several times a day are confused by multiple demands and expectations and lost instructional time. Students in pull-out programs may also suffer from conflict or lack of coordination with the core local program.

A research study conducted by the Detroit Public Schools (Feb. 1986) sought to determine the nature and impact of basic skills improvement programs in their school system. The purpose was to answer questions concerning the type setting in which reading and math took place and whether the setting had significant bearing upon academic performance. Procedures to ascertain the type of setting in which basic skills instruction took place and the impact of the instruction upon the student's academic performance, citizenship and attendance were implemented. Principals designated the types of settings, and random samples of students were selected for each of the instructional settings, data was obtained from school records, and frequency distribution was prepared to depict the numbers and percents of schools using each classification of instructional approach. Data indicated that there are no overwhelming statistical differences among the various settings for providing remedial instruction to basic skills students. The findings of no significant differences among the various settings may have a positive aspect. If, in reality, the type of setting causes no differential impact on student's achievement, then cost becomes a factor. The more expensive types of approaches could be eliminated in favor of those less costly.

Taylor (Principal, Sept. 1985) considers the potential detrimental effects on classroom teaching of programs that pull individual students out of the classroom for specialized instruction or activities. Taylor suggests alternative means for meeting student and teacher needs within the classroom. She questions the educational effectiveness of support systems for the classroom teacher and asks whether they merely add to the paperwork burden and general confusion of an already overloaded system. Special programs disrupt regular classroom instruction. Teachers are locked into time schedules. Teacher morale is affected by frustrating situations and scheduling. Pull-out programs often create situations that discriminate against certain groups - labeling and lack of responsibility. Short time periods involved in many pull-out programs are also detrimental, concludes Taylor.

Final recommendations include pull-out groups meet before or after school or that if pull-out programs were drastically reduced, funds that supported them could be used for class size reductions. Each school should be free to work out its own solutions to problems involving remedial education. Taylor advocates integrated learning

within the classroom. Recommendations include concentrating on establishing effective classrooms with well paid teachers and smaller class sizes, instead of instituting more pull-out programs. Suggestions include funding formulas to be revised to permit creative, interdepartmental programs. Focus on "life after pull-out" to include teacher training to include methods of teaching children who are mildly disabled and gifted, careful screening of students, before and after school tutoring for remediation and enrichment, reconstruction of federal programs, dollars saved to reduce class size.

As a response to dissatisfaction with the pull-out model, seven school districts in Indiana (Harping, 1985), implemented alternative approaches. The seven programs included two replacement models, two aide-based delivery service designs, an in-class reading program for the secondary level, an in-class elementary level program combined with in-class lab model, and a traditional in-class program. The alternative programs were developed to overcome such problems as classroom disruption, scheduling difficulties, student movement disturbances, fragmentation of instruction, loss of time, and stigmatizing of program participants.

Although little evidence supports a dramatic reduction in these problem areas as a result of changing to other models, efforts were made to take a close look at programs which have attempted improvement by change. All the models required forethought, planning and dedication. For some school districts, the benefits may not be worth the effort. Others may believe the pull-out program is still the most workable for them. Conclusions emphasize a number of factors including number of students requiring services, costs of additional teachers, space and materials, in contemplating alternative approaches. In-service for basic skills personnel is necessary in each model. Policies on roles and responsibilities must be clear. Outcomes for each model indicate that a remediation approach which rejects fragmentation becomes increasingly attractive in school districts attempts to be effective.

Pull-out programs have more of an effect on teacher morale than students (Harrison, 1983). Outcomes of the study of interruptions on the morale and work of teachers and pupils in elementary schools show that ability to work was hampered by distractions as pull-out programs, visitors, and school intercom. Repeated interruptions adversely affected morale and work. Teachers and pupils estimate that about one half hour of class time per day was devoted to trying to eliminate distractions. Interruptions by visitors were the most distracting to teachers and pupils. As stated, pull-out programs had more effect on teacher morale, and the intercom more commonly distracted students. Such disruptions can undermine the educational processes and frustrate individual effort to achieve academic goals. The very organization that requires time and work schedules produces interruptions that could interfere with the accomplishment of educational objectives.

The research involved a study using survey techniques. The survey instructions consisted of open-ended and closed-end items and was designed to answer the research questions. Results revealed that none of the forms researched had an influence on morale, except that these are viewed as being "unpredictable events". It was concluded that while a person's attitude is not necessarily affected by these forms of distractions, individuals could be exhibiting some stress reaction and performance degradation. Unpredictable and uncontrollable environmental stimuli are likely to produce such behavior.

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APPENDICES

Appendix A

California Achievement Pre-Test Results of Eligible Students

Reading

Grade 1	Name	N.C.E.
	Gina	27
	Al	35
	Robin	37
	Angel	34
	Candy	39
	Alyce	38
	Abraham	38
	Elaine	31
		31 (Mean)
Grade 2		
	Jennifer	39
	Aaron	14
	Kevin	25
		26 (Mean)
Grade 3		
	Brian	42
	Jennifer	45
	Joanna	21
	Danielle	40
	David	42
		37 (Mean)
Grade 4		
	Mellisa	44
	Jennifer	24
		32 (Mean)

Pre-test results/reading (cont.)

Grade 5	Name	N.C.E.
	David	21
	Mandie	38
	Aurora	42
	Jennifer	32
		33 (Mean)
Grade 6		
	Brian	32
	Jennifer	37
	Maria	42
	Kim	52
		40 (Mean)

Mathematics

Grade 1		
	Eva	39
	Alyssa	43
	Candy	39
	Abraham	37
	Ayssa	38
		39 (Mean)
Grade 2		
	Jennifer	33
	Jesse	39
	Mellisa	42
	Aaron	38
		38 (Mean)

Pre-test results/math (cont.)

Grade 3	Name	N.C.E.
	Tom	30
	Claudine	45
	Joanna	45
	Jennifer	41
	Jessica	47
		41 (Mean)
Grade 4		
	Melissa	43
	Jenn	25
		34 (Mean)
Grade 5		
	David	17
	Joe	36
	Noelle	41
	Mandie	44
	Kelly	45
	Gina	47
	Jennifer	32
	Robert	42
	Jenn	46
		38 (Mean)
Grade 6		
	Michael	35
	Carmine	42
	Brian	47
	James	47
	Kim	48
		43 (Mean)

Appendix B

California Achievement Post-Test Results of Basic Skills Students

Reading

Grade 1	Name	N.C.E.
	Gina	51
	Al	95
	Robin	78
	Angel	67
	Candy	62
	Alyce	56
	Abraham	60
	Elaine	25
		61 (Mean)
Grade 2		
	Jennifer	43
	Aaron	67
	Kevin	73
		61 (Mean)
Grade 3		
	Brian	69
	Jennifer	69
	Joanna	67
	Danielle	56
	David	54
		63 (Mean)
Grade 4		
	Melissa	46
	Jennifer	41
		43 (Mean)

Post-Test results/reading (cont.)

Grade 5	Name	N.C.E.
	David	41
	Mendie	53
	Aurora	40
	Jennifer	41
		43 (Mean)
Grade 6		
	Brian	39
	Jennifer	46
	Maria	52
	Kim	70
		51 (Mean)

Math

Grade 1		
	Eva	59
	Alysse	54
	Candy	83
	Abraham	85
	Alyssa	76
		76 (Mean)
Grade 2		
	Jennifer	40
	Jesse	75
	Melissa	63
	Aaron	86
		66 (Mean)

Post-Test results/math (cont.)

Grade 3	Name	N.C.E.
	Tom	77
	Claudine	73
	Joanna	65
	Jennifer	71
	Jessica	70
		71 (Mean)
Grade 4		
	Melissa	74
	Jennifer	52
		63 (Mean)
Grade 5		
	David	17
	Joe	37
	Noelle	47
	Mandie	36
	Kelly	56
	Gina	45
	Jennifer	40
	Robert	41
	Jennifer	45
		41 (Mean)
Grade 6		
	Michael	51
	Carmine	47
	Brian	65
	James	59
	Kim	51
		51 (Mean)